

## PATENT ABSTRACTS OF JAPAN

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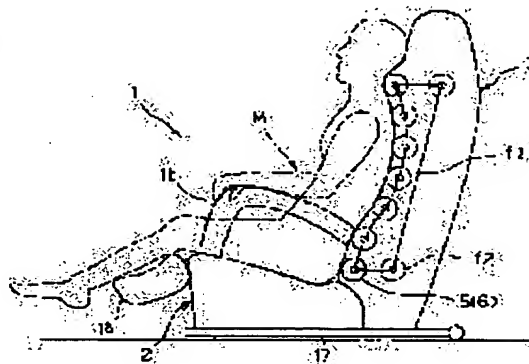
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## (54) MASSAGE MACHINE

## (57)Abstract:

PROBLEM TO BE SOLVED: To provide a massage machine capable of providing the sufficient effect of massage by performing full-scale massage after adapting the body to the massage by rubbing balls.

SOLUTION: The massage machine (1) is provided with a massage unit (4) provided with the rubbing balls (5) and (6) and enables the massage by selectively or appropriately combining a plurality of massage modes. Prior to the start of the massage by the massage mode, a fade-in massage as a break-in massage is executed.



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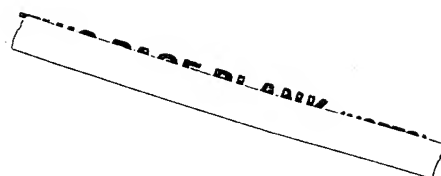
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## CLAIMS

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[Claim(s)]

[Claim 1] The massage machine characterized by taming and performing a fade-in massage as a massage in advance of initiation of the massage by massage mode in the massage machine whose massage possessed the massage unit which formed the massaging ball, combined alternatively or suitably out of two or more massage modes, and was enabled.

[Claim 2] The massage machine characterized by performing a fade-out massage as a massage for cooling down at the time of the massage termination by massage mode in the massage machine whose massage possessed the massage unit which formed the massaging ball, combined alternatively or suitably out of two or more massage modes, and was enabled.

[Claim 3] The massage machine carry out performing a fade-out massage as a massage for cooling down as the description at the time of the massage termination by massage mode while taming and performing a fade-in massage as a massage in advance of initiation of the massage by massage mode in the massage machine whose massage possessed the massage unit which formed the massaging ball, combined alternatively or suitably out of two or more massage modes, and was enabled.

[Claim 4] the massage performed before and after the massage by massage mode -- a massaging ball -- -ed -- free medical treatment -- a massage machine given in any 1 term of claims 1-3 characterized by being carried out in the location which advanced the massaging ball drive unit to extent which contacts the section lightly.

[Claim 5] While constituting at a chair ceremony equipped with a seat body and a back board, the elevator style which makes it go up and down a massage unit along with a back board is prepared. furthermore, this massage unit is made to rock a massaging ball to a cross direction -- striking -- business -- a motor -- The massaging ball drive unit possessing a motor is arranged. eccentric rotation of the massaging ball is carried out -- rubbing -- business -- And the massage which carries out before and after a massage the motor for an attitude constitutes this massaging ball drive unit possible [ an attitude ] to a cross direction the whole massaging ball, and moreover according to massage mode the massaging ball among the range of said massaging ball drive unit which can be moved -- -ed -- free medical treatment -- a massage machine given in any 1 term of claims 1-4 characterized by carrying out in the condition of having moved to the backmost part location which can be massaged in contact with the

section.

[Claim 6] The massage performed before and after the massage by massage mode is a massage machine according to claim 5 characterized by being the rolling massage performed by making it go up and down a massaging ball along with a back board through an elevator style.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a massage machine.

[0002]

[Description of the Prior Art] Generally what was constituted at a chair ceremony possessing a seat body and a back board has spread so that the massage unit which formed the massaging ball may be provided, various things may exist in the massage machine whose massage combined alternatively or suitably out of two or more massage modes, and was enabled and it can massage conventionally, after the user has relaxed also in this kind of massage machine.

[0003] Moreover, it has two or more driving sources, such as the main driving source which it rubs [ driving source ] to a massaging ball and operates it as a general configuration of the above-mentioned massage unit, the \*\* driving source before and after making a massaging ball drive to a cross direction, and a driving source for the upper and lower sides which makes a massaging ball drive in the vertical direction, and rubbed and struck combining the drive by these driving sources, and the massage of various gestalten, such as rolling and acupressure, was enabled.

[0004]

[Problem(s) to be Solved by the Invention] However, when a user chooses it as arbitration from two or more massage modes prepared beforehand in the above-mentioned conventional massage machine and the massage was started, the massages by the selected massage mode were natural but the thing started suddenly.

[0005] That is, the body before receiving a massage is in the condition which was naturally elaborate, and muscles are in the condition of not unfolding at all.

[0006] The effective massage did not have to become until the body would also be in turgescence in many cases with the pain immediately after initiation when the body was contacted by a certain amount of force in the massaging ball under such circumstances and the massage was started suddenly, time amount passed for a while

and the body adapted itself, but the pain had to be put up with on the contrary in many cases.

[0007] Now, it was difficult to fully unfold stiffness of the body within the time limit which could not receive a massage in the condition of having relaxed from the beginning of a massage to the last, but was especially made desirable healthily.

[0008] Moreover, also when the selected massage mode was completed, it might end suddenly. It is remarkable especially when the massage execution time is limited. Thus, that a massage is completed suddenly becomes the factor which brings a user displeasure.

[0009] Furthermore, the thing of a configuration of having been taken into consideration to there in the conventional massage machine, although arrangement movement-time amount which returns a muscular condition to a normal state to some extent was desired rather than it started the usual life actuation suddenly with the muscles (body) massaged and understood by the massage does not exist.

[0010] This invention aims at offering the massage machine which can solve the above-mentioned technical problem.

[0011]

[Means for Solving the Problem] So, in this invention according to claim 1, we decided to tame and to perform a fade-in massage as a massage in advance of initiation of the massage by massage mode, in the massage machine whose massage possessed the massage unit which formed the massaging ball, combined alternatively or suitably out of two or more massage modes, and was enabled.

[0012] Moreover, in this invention according to claim 2, we decided to perform a fade-out massage as a massage for cooling down at the time of the massage termination by massage mode in the massage machine whose massage possessed the massage unit which formed the massaging ball, combined alternatively or suitably out of two or more massage modes, and was enabled.

[0013] Moreover, in the massage machine whose massage possessed the massage unit which formed the massaging ball in this invention according to claim 3, combined alternatively or suitably out of two or more massage modes, and was enabled, while taming and performing the fade-in massage as a massage in advance of initiation of the massage by massage mode, at the time of the massage termination by massage mode, it carried out performing a fade-out massage as a massage for cooling down.

[0014] moreover, the massage performed before and after the massage by the above-mentioned massage mode in this invention according to claim 4 -- a massaging ball -- ed -- free medical treatment -- it has the description to be carried out in the

location which advanced the massaging ball drive unit to extent which contacts the section lightly.

[0015] Moreover, while constituting from this invention according to claim 5 at a chair ceremony equipped with a seat body and a back board The elevator style which makes it go up and down a massage unit along with a back board is prepared. furthermore, this massage unit is made to rock a massaging ball to a cross direction -- striking -- business -- a motor -- The massaging ball drive unit possessing a motor is arranged. eccentric rotation of the massaging ball is carried out -- rubbing -- business -- And the massage which carries out before and after a massage the motor for an attitude constitutes this massaging ball drive unit possible [ an attitude ] to a cross direction the whole massaging ball, and moreover according to massage mode the massaging ball among the range of said massaging ball drive unit which can be moved -- -ed -- free medical treatment -- it has the description for it to have been made to carry out in the condition of having moved to the backmost part location which can be massaged in contact with the section.

[0016] Furthermore, in this invention according to claim 6, the massage performed before and after the massage by the above-mentioned massage mode has the description for it to be the rolling massage performed by meeting that the back also hangs down and making it go up and down a massaging ball through an elevator style.  
[0017]

[Embodiment of the Invention] In the massage machine whose massage possessed the massage unit which formed the massaging ball, combined alternatively or suitably out of two or more massage modes, and was enabled, in advance of initiation of the massage by massage mode, this invention is tamed and is made to perform a fade-in massage as a massage.

[0018] That is, he is trying to make the preparation of the body perform to a massage formal [ follow / are made to massage by taming so that the body may adapt itself to a massage according to a massaging ball first irrespective of the massage of the mode chosen when strength / in / it rubs uses acupressure and strikes and / each / various massage mode, such as rolling, and / mode / operation beforehand prepared for the massage machine was chosen and a massage was started, and reinforcement, and ].

[0019] Therefore, since the body has adapted itself even if the full-scale massage by the massaging ball is started, a massage can be received smoothly, without becoming it tense, and the effectiveness of a massage can fully be acquired.

[0020] Moreover, it may be made to perform a fade-out massage as a massage for cooling down at the time of the massage termination by massage mode.



[0021] The arrangement movement-time amount which returns the condition of the muscles (body) massaged and understood by the massage to a normal state will be set up, and it can move from it to the usual life actuation smoothly after massage termination while this can prevent a massage being completed suddenly and bringing a user displeasure. In addition, it is performing an above-mentioned fade-in massage and an above-mentioned fade-out massage more preferably [ both ].

[0022] by the way, the massage performed before and after the massage by the above-mentioned massage mode, i.e., a fade-in massage, and a fade-out massage -- a massaging ball -- -ed -- free medical treatment -- it is good to be made to be carried out in the location which advanced the massaging ball drive unit to extent which contacts the section lightly.

[0023] -ed -- free medical treatment -- the load to the body which is the section is the optimal greatly at the time of installation of a formal massage by comfortable massage, or termination.

[0024] Moreover, it is desirable to constitute at a chair ceremony equipped with a seat body and a back board as a gestalt of a massage machine.

[0025] and the above-mentioned massage unit is made to rock a massaging ball to a cross direction -- striking -- business -- a motor -- The massaging ball drive unit possessing a motor is arranged. eccentric rotation of the massaging ball is carried out -- rubbing -- business -- And the massage which carries out before and after a massage the motor for an attitude constitutes this massaging ball drive unit possible [ an attitude ] to a cross direction the whole massaging ball, and moreover according to massage mode the massaging ball among the range of said massaging ball drive unit which can be moved -- -ed -- free medical treatment -- it can carry out in the condition of having moved to the backmost part location which can be massaged in contact with the section.

[0026] While a user can receive a massage in the condition of having relaxed with the easy posture, by this configuration Since change of the contact depth to the body of a massaging ball can be enlarged by enabling the attitude of a massaging ball drive unit By attaining a variegated massage by class doubling with rocking of a massaging ball, eccentric rotation, and an order attitude, taming, before receiving the starting variegated massage moreover, and performing the fade-in massage as a massage Since the body can be accommodated to a massaging ball, the massage effectiveness can be heightened more. Moreover, after [ full-scale ] winning popularity, it can move to the usual life actuation smoothly after massage termination by receiving the fade-out massage used as cooling down.

[0027] and the massage which performs before and after the massage by massage mode as having mentioned above -- the massaging ball among the range of said massaging ball drive unit which can be moved -- ed -- free medical treatment -- it becomes the very comfortable massage which is having the body stroked by it having been made having carried out in the condition moved to the backmost-part location which can massage in contact with the section, and it has to a subsequent formal massage -- it tames and it becomes that it is the optimal as a massage and a massage for cooling down after formal massage termination.

[0028] By the way, the massage performed before and after the massage by massage mode is good to consider as the rolling massage performed by making it go up and down a massaging ball along with a back board through an elevator style.

[0029] Namely, only in the actuation which makes it go up and down a massage unit, a comfortable flush rolling massage can be performed, and by very comfortable massage, a user is led to a formal massage and can accept termination of a formal massage with a sufficient feeling further.

[0030]

[Example] The massage unit which prepared the typical explanatory view of the massage machine applied to this invention at drawing 1 in drawing 2 - drawing 7 at this massage machine is shown.

[0031] The massage machine 1 applied to this example as shown in drawing 1 is made into the chair type, and the back connected free [ a reclining ] also hung it down to the seat body 2 which carried out receipt arrangement of the air cell which is not illustrated, and enabled the air massage of a bottom part, and this seat body 2, and it is equipped with 3. Among drawing, the guide-peg attaching part and 1b to which, as for M, a user and 1a hold User's M guide peg are an armrest, and into said guide-peg attaching part 1a, although they do not illustrate this, either, receipt arrangement of the air cell is carried out, and they can carry out the air massage of the guide peg. moreover, from powering on to this massage machine 1, R is the remote control made operational and mentions actuation of the whole power-source OFF and massage machine later -- as -- the various switch carbon buttons S1 -- wireless connection is made with the control unit 16 which was equipped with the display A which consists of a control unit S which allotted ..., and a liquid crystal screen, and was arranged in the lower part of the seat body 2. 19 is the remote control stowage established in the front flank of armrest 1b.

[0032] In a back board 3, the massage unit 4 which is the main function part of this massage machine 1 so that rise and fall may become possible along with this back

board 3 is arranged, and it enables it for the massaging ball drive unit 9 prepared in this massage unit 4 to perform a variegated massage.

[0033] The massaging ball drive unit 9 is struck for making it operate by striking by making a cross direction rock the massaging balls 5 and 6 of a right-and-left pair, as shown in drawing 1 - drawing 7 . Namely, the device 7, in order to make it operate by rubbing by carrying out eccentric rotation of the massaging balls 5 and 6 -- rubbing -- a device 8 -- providing -- \*\*\*\* -- this massaging ball drive unit 9 -- the side front (side which touches a user) of a back board 3 -- turning -- an attitude -- it is constituted movable.

[0034] In addition, although this example took and explains the so-called chair-type massage machine which supports a user's body to the example with the back board 3, the so-called bed-type massage machine which supports a user's body not only on this but on a bed may be used. moreover, the massaging ball drive unit 9 -- the side front (side which touches a user) of a back board 3 -- turning -- an attitude -- as long as it is the configuration constituted movable, the thing which strikes, rubs with a device 7, is not necessarily equipped with the device 8, and is equipped with either, or the thing of structure which made massaging balls 5 and 6 only project may be used. Moreover, an air massage function may be omitted.

[0035] Furthermore, remote control R can also be considered as the configuration attached in the top-face section of armrest 1b free [ attachment and detachment ].

[0036] Below, the structure of each part of the massage machine 1 concerning this example and its actuation are explained concretely.

[0037] As [seat body 2 and the back also hang down and it is shown in 3] drawing 1 , the seat body 2 has attached in the interior of the taking-a-seat section 14 the weight detection sensor 15 which served as the taking-a-seat detection means for a pressure to detect that the user has sat down, and this weight detection sensor 15 is connected to said control unit 16. Among drawing, 17 are the leveling pad established in the inferior-surface-of-tongue section of the seat body 2, and hold the massage machine 1 whole on a floor line.

[0038] While having connected the back board 3 with this seat body 2 free [ a reclining ] according to the reclining device which is not illustrated and attaching the racks 10 and 11 of a right-and-left pair in the regions-of-back side of the said back board 3 interior along with a back board 3, these racks 10 and 11 were made to meet and the cross-section KO character-like guide rails 12 and 13 of a Uichi Hidari pair are attached. In addition, the detection sensor 18 was formed in said reclining device whenever [ reclining-angle / which detects whenever / tilt-angle / of a back board 3 ],

and this is also connected to said control unit 16.

[0039] The [massage unit 4] massage unit 4 As shown in drawing 1 – drawing 7 , while attaching the motor 23 for rise and fall as a mechanical component for rise and fall for making the right-hand side lower part of the abbreviation rectangle core box-like massage unit casing 22 go up and down the massage unit 4 The drive gear 25 is attached in the driving shaft 24 of the motor 23 for the said rise and fall, the gear change gear 26 is meshed on this drive gear 25, and interlocking connection of the drive worm 27 is carried out further at this gear change gear 26.

[0040] On the other hand, in the lower part of the massage unit casing 22 While meshing the gear section which has attached the rise-and-fall shaft 28 which carried out the distraction crosswise [ right-and-left ] free [ rotation ], and was formed in the right-hand side lateral surface of this rise-and-fall shaft 28, and said drive worm 27 The right-and-left edge of the rise-and-fall shaft 28 is made to project to the method of an outside of the massage unit casing 22, and the racks 10 and 11 which attached pinion gears 30 and 31 in this right-and-left edge made to project, and attached these pinion gears 30 and 31 in the back board 3 are meshed further. The rotary encoder 91 as an amount detection means for rise and fall of drives for detecting the amount (include angle) which the rise-and-fall shaft 28 drove by the motor 23 for rise and fall (rotation) is arranged in the rise-and-fall shaft 28. 32 are motor casing which contained the motor 23 for rise and fall attached in the right-hand side lower part of the massage unit casing 22 among drawing. In addition, the motor 23 for rise and fall and the rotary encoder 91 are connected to the control unit 16 which the back also hung down and was arranged in the lower part of 3 as shown in drawing 9 .

[0041] Moreover, the massage unit 4 is attached in the right-and-left side upper part of the massage unit casing 22 for the guide shafts 33 and 34 of a Uichi Hidari pair, enabling free rotation. The edge of each guide shafts 33 and 34 is made to project to the method of an outside of the massage unit casing 22. Guide rollers 35 and 36 are attached in the edge of these guide shafts 33 and 34 made to project respectively free [ rotation ], and the interior of the guide rails 12 and 13 of the shape of a cross-section KO character which attached these guide rollers 35 and 36 in the back board 3 is inserted, enabling free sliding.

[0042] The massaging ball drive unit 9 possessing the massaging balls 5 and 6 which massage by contacting User's M body through the surface section of a back board 3 is arranged in a cross direction rockable at this massage unit 4.

[0043] That is, the massage unit 4 turned to the cross direction the massaging ball drive unit casing 37 which constitutes the massaging ball drive unit 9, and has

attached it in the center section of the rise-and-fall shaft 28 arranged where the distraction is carried out to the lower part of the massage unit casing 22 towards the right-and-left cross direction free [ rocking ], and the massaging ball drive unit 9 enables it to rock it towards a cross direction by using said rise-and-fall shaft 28 as the rocking supporting point. With rocking to this cross direction, the massaging ball drive unit 9, as a result massaging balls 5 and 6 will move to a cross direction.

[0044] An attitude migration device to make a cross direction rock this massaging ball drive unit 9, and carry out attitude migration The motor 38 for an attitude as a mechanical component for an attitude for carrying out attitude migration of the massaging ball drive unit 9 is attached in the left-hand side upper part of the massage unit casing 22. While attaching the drive gear 40 in the driving shaft 39 of the motor 38 for the said attitude and meshing the gear change gear 41 on this drive gear 40, interlocking connection of the drive worm 42 is carried out at this gear change gear 41.

[0045] moreover, in the upper part of the massage unit casing 22 The attitude shaft 43 which carried out the distraction towards the right-and-left cross direction is attached free [ rotation ], and the gear section (illustration abbreviation) formed in the left-hand side lateral surface of this attitude shaft 43 and said drive worm 42 are meshed. Further While attaching the pinion gears 44 and 45 of a Uichi Hidari pair in the halfway section of said attitude shaft 43 The racks 46 and 47 of the shape of radii corresponding to the upper part of the massaging ball drive unit casing 37 of a Uichi Hidari pair are attached with said pinion gears 44 and 45, and said pinion gears 44 and 45 are meshed on these racks 46 and 47. The rotary encoder 92 as an amount detection means for an attitude of drives for detecting the amount (include angle) which the attitude shaft 43 drove by the motor 38 for an attitude (rotation) is arranged in the attitude shaft 43. Motor casing for 48 to contain the motor 38 for an attitude attached in the left-hand side upper part of the massage unit casing 22 and 49 are the bearing for supporting the attitude shaft 43, enabling free rotation among drawing. In addition, the motor 38 for an attitude and the rotary encoder 92 are connected to a control unit 16 as shown in drawing 9 .

[0046] Moreover, turn the pieces 50 and 51 of rack support of a Uichi Hidari pair to the method of an outside, and the above-mentioned massaging ball drive unit 9 forms them in the upper part of the core box-like massaging ball drive unit casing 37, as shown in drawing 2 - drawing 4 . While attaching the radii-like racks 46 and 47 in the edge of each pieces 50 and 51 of rack support, respectively The piece 52 of rise-and-fall shaft support of the letter of the front view abbreviation for U characters was formed in the before [ the massaging ball drive unit casing 37 ] side

lower part, and bearing 53 and 54 was attached in the right-and-left flank of this piece 52 of rise-and-fall shaft support, respectively, and is further inserted in the coaxial carriers 53 and 54 for the rise-and-fall shaft 28 at it, enabling free rotation.

[0047] Furthermore, the massaging ball drive unit 9 was arranged in the interior of the massaging ball drive unit casing 37, was struck, rubbed with the device 7, and is equipped with the device 8.

[0048] It attaches, after the driving shaft 58 turned the motor 57 up and has projected it. as it strikes and a device 7 is shown in drawing 2 - drawing 5 , in order to strike massaging balls 5 and 6 in the left-hand side lower part of the massaging ball drive unit casing 37 and to operate the massaging ball drive unit 9 in it -- striking -- business -- as a mechanical component -- striking -- business -- this driving shaft 58 -- striking -- business -- while carrying out interlocking connection of the drive worm 59, the upper part of the massaging ball drive unit casing 37 was made to carry out the distraction towards the right-and-left cross direction -- striking -- business -- the rotation shaft 60 is attached, enabling free rotation.

[0049] and the left-hand side section of the rotation shaft 60 for the said \*\*\*\* -- striking -- business -- the follower worm gear 61 -- fixing -- the follower worm gear 61 for the said \*\*\*\* -- said -- striking -- business, while meshing the drive worm 59 said -- striking -- business -- the right-and-left edge of the rotation shaft 60 -- striking -- business -- eccentric shafts 62 and 63 -- the axis of the eccentric shafts 62 and 63 for the said \*\*\*\* -- striking -- business -- it forms successively, where eccentricity is carried out up and down from the axis of the rotation shaft 60, respectively, and the massaging ball devices 64 and 65 are considered as the configuration which carried out interlocking connection, respectively at the eccentric shafts 62 and 63 for the said \*\*\*\*. striking -- business -- the rotation shaft 60 -- striking -- business -- a motor 57 -- striking -- business -- in order to detect the amount (include angle) which the rotation shaft 60 drove (rotation) -- striking -- business -- the rotary encoder 93 as an amount detection means of drives is arranged. the inside of drawing, and 66 -- striking -- business -- it is the bearing for supporting the driving shaft 58 of a motor 57, enabling free rotation. in addition -- striking -- business -- the motor 57 and the rotary encoder 93 are connected to the control unit 16 which the back also hung down and was arranged in the lower part of 3 as shown in drawing 9 .

[0050] It attaches, after the driving shaft 68 turned the motor 67 up and has projected it. as it rubs and a device 8 is shown in drawing 2 - drawing 6 on the other hand, in order to rub massaging balls 5 and 6 in the right-hand side lower part of the massaging

ball drive unit casing 37 and to operate the massaging ball drive unit 9 in it -- rubbing -- business -- as a mechanical component -- rubbing -- business -- The follower worm gear 70 is fitted in loosely enabling free rotation. this driving shaft 68 -- rubbing -- business -- while carrying out interlocking connection of the drive worm 69 -- striking -- business -- the right-hand side section of the rotation shaft 60 -- rubbing -- business -- Driving pulleys 71 are formed successively. the follower worm gear 70 for the said \*\*\*\* -- said -- rubbing -- business -- while meshing the drive worm 69 -- rubbing -- business -- the follower worm gear 70 -- rubbing -- business -- further The rotation shaft 72 is attached enabling free rotation. the distraction was carried out to the lower part of the massaging ball drive unit casing 37 towards the right-and-left cross direction -- rubbing -- business -- the right-hand side section of the rotation shaft 72 for the said \*\*\*\* -- rubbing -- business -- the follower pulley 73 -- attaching -- the follower pulley 73 for the said \*\*\*\* -- said -- rubbing -- business -- between driving pulleys 71, the suspension of the transmission belt 74 is carried out, and it is constituted. furthermore -- said -- rubbing -- business -- in the right-and-left edge of the rotation shaft 72, interlocking connection of the massaging ball devices 64 and 65 is carried out, respectively. rubbing -- business -- the rotation shaft 72 -- rubbing -- business -- a motor 67 -- rubbing -- business -- the rotary encoder 94 as an amount detection means for rise and fall of drives for detecting the amount (include angle) which the rotation shaft 72 drove (rotation) is arranged. the inside of drawing, and 75 -- rubbing -- business -- it is the bearing for supporting the driving shaft 68 of a motor 67, enabling free rotation. in addition -- rubbing -- business -- the motor 67 and the rotary encoder 94 are connected to the control unit 16 which the back also hung down and was arranged in the lower part of 3 as shown in drawing 9 .

[0051] The massaging ball arm base materials 76 and 77 of a Uichi Hidari pair are attached in the right-and-left edge of the rotation shaft 72 in the shape of an inclination, after the upper part of these massaging ball arm base materials 76 and 77 has turned to the method of an outside. moreover, the massaging ball devices 64 and 65 are shown in drawing 2 - drawing 6 -- as -- rubbing -- business -- It attaches in eccentric shafts 62 and 63. the posterior part of these massaging ball arm base materials 76 and 77 -- the point of the interlocking arms 78 and 79 -- respectively -- interlocking successive formation -- carrying out -- the end face section of these interlocking arms 78 and 79 -- striking -- business -- further The end face section of the massaging ball support arms 80 and 81 was attached in the before [ the massaging ball arm base materials 76 and 77 ] side upper part, and massaging balls 5 and 6 are

attached in the point of these massaging ball support arms 80 and 81 free [ rotation ]. the inside of drawing, and 84 and 85 -- rubbing -- business -- it is a splicer for attaching the massaging ball arm base materials 76 and 77 in the right-and-left edge of the rotation shaft 72 free [ rotation ] in the inclination condition. In addition, the point and the massaging ball arm base materials 76 and 77 of the interlocking arms 78 and 79 are connected according to free joint structure.

[0052] And in this example, if the motor 38 for an attitude is driven through a control unit 16 using remote control R The attitude shaft 43 rotates through the drive gear 40, the gear change gear 41, and the drive worm 42. While pinion gears 44 and 45 rotate in connection with it, it moves along with racks 46 and 47, and the massaging ball drive unit casing 37 rocks towards a cross direction centering on the rise-and-fall shaft 28 by that cause, and massaging balls 5 and 6 are made to carry out attitude migration at a cross direction (refer to drawing 7 ).

[0053] In this example, as shown in drawing 8 , by making the massaging ball drive unit 9 move The stowed position which the back also hung down massaging balls 5 and 6 and was contained inside 3 (in drawing 8 , the tip of massaging balls 5 and 6 is located on the line shown with a sign L1.) The flush location which performs a very weak massage (in drawing 8 , the tip of massaging balls 5 and 6 is located on the line shown with a sign L2.) The weak location which performs a weak massage (in drawing 8 , the tip of massaging balls 5 and 6 is located on the line shown with a sign L3.) A location while performing the massage of whenever [ middle ] (in drawing 8 , the tip of massaging balls 5 and 6 is located on the line shown with a sign L4.) The strong location (in drawing 8 , the tip of massaging balls 5 and 6 is located on the line shown with a sign L5.) which performs a strong massage, \*\*\*\*\* which performs a very strong massage (in drawing 8 ) the tip of massaging balls 5 and 6 is located on the line shown by sign L6. It enables it to make six steps move.

[0054] The massage machine 1 concerning this example has composition which has been mentioned above, and by actuation of the control unit S prepared in remote control R, while a control unit 16 detects the amount of drives of each shafts 28, 43, 60, and 72 (rotation include angle) with the rotary encoders 91, 92, 93, and 94 as an amount detection means of drives, it operates as follows by making each motors 23, 38, 57, and 67 as a mechanical component drive.

[0055] That is, if the motor 23 for rise and fall as a mechanical component for rise and fall is driven with a control unit 16, the rise-and-fall shaft 28 will rotate, pinion gears 30 and 31 will run along with racks 10 and 11 in connection with it, and the massage unit 4 will carry out rise-and-fall migration along with a back board 3. In that case, the



control unit 16 detected the rotation include angle of the rise-and-fall shaft 28 with the rotary encoder 91 as an amount detection means for rise and fall of drives, and has detected the amount of rise and fall of the massage unit 4. A rolling massage is attained by this actuation.

[0056] Moreover, if the motor 38 for an attitude as a mechanical component for an attitude is driven with a control unit 16, pinion gears 44 and 45 will rotate through the drive gear 40, the drive worm 42, and the attitude shaft 43, the racks 46 and 47 attached in the massaging ball drive unit casing 37 in connection with it will move, the massaging ball drive unit casing 37 will carry out attitude migration at a cross direction, and massaging balls 5 and 6 will carry out attitude migration at a cross direction (refer to drawing 6 ). In that case, the control unit 16 detected the rotation include angle of the attitude shaft 43 with the rotary encoder 92 as an amount detection means for an attitude of drives, and has detected the amount of attitudes of the massaging ball drive unit 9 (massaging balls 5 and 6). An acupuncture massage is attained by this actuation.

[0057] moreover, the control unit 16 -- striking -- business -- as a mechanical component -- striking -- business, if a motor 57 is driven Eccentric shafts 62 and 63 rotate up and down by turns. striking -- business -- the drive worm 59 -- striking -- business -- the follower worm gear 61 -- minding -- striking -- business -- the rotation shaft 60 -- rotating -- it -- following -- striking -- business -- thereby The interlocking arms 78 and 79 function as a crank, the massaging ball arm base materials 76 and 77 rock forward and backward, and massaging balls 5 and 6 operate by rocking and striking to a cross direction by turns. that time -- a control unit 16 -- striking -- business -- the rotary encoder 93 as an amount detection means of drives -- striking -- business -- the rotation include angle of the rotation shaft 60 was detected, and the amount of rocking of massaging balls 5 and 6 is detected. This actuation strikes and a massage becomes possible.

[0058] moreover, the control unit 16 -- rubbing -- business -- as a mechanical component -- rubbing -- business -- if a motor 67 is driven -- rubbing -- business -- the drive worm 69 -- rubbing -- business -- the follower worm gear 70 -- rubbing -- business -- a driving pulley 71 and the transmission belt 74 -- rubbing -- business -- the follower pulley 73 -- minding -- rubbing -- business -- the rotation shaft 72 rotates, the massaging ball arm base materials 76 and 77 rotate in connection with it, and it operates by massaging balls' 5 and 6 carrying out eccentric rotation, and rubbing to a cross direction. that time -- a control unit 16 -- rubbing -- business -- the rotary encoder 94 as an amount detection means of drives -- rubbing -- business

-- the rotation include angle of the rotation shaft 72 was detected, and the amount of eccentric rotation of massaging balls 5 and 6 is detected. By this actuation, it rubs and a massage becomes possible.

[0059] And this massage machine 1 By driving each motors 23, 38, 57, and 67 as a mechanical component, while a control unit 16 detects the amount of drives of each shafts 28, 43, 60, and 72 (rotation include angle) with the rotary encoders 91, 92, 93, and 94 as an amount detection means of drives The shoulder of a user's body, the back, the waist, etc. can be massaged in the variegated mode which is explained in full detail behind by combining each actuation which enables it to control the location of massaging balls 5 and 6 finely, and is to the above-mentioned base.

[0060] Here, bodily-shape detection actuation is explained in accordance with the case where this massage machine 1 is actually used, referring to drawing 10 - drawing 12 . In addition, in drawing 10 - drawing 12 , in order to make an understanding easy, the message unit 4 omits and shows only massaging balls 5 and 6.

[0061] [bodily-shape detection and a massage] -- here, the case where the automatic massage course currently beforehand programmed by this massage machine 1 is chosen is explained. In addition, the automatic massage course is divided into the following five courses, and it enables it to choose it as arbitration from these in this example.

[0062] "Whole body course" As for a lower half of the body, an air massage is performed by the course in which the upper half of the body and a lower half of the body massage uniformly, in the above-mentioned guide-peg attaching part 1a and the taking-a-seat section 14.

[0063] "A shoulder and neck course" Although \*\* Li and near the lumbar part mainly include a neck and near a shoulder through the course massaged preponderantly, a lower half of the body is not contained.

[0064] "Waist course" It is the course which mainly massages preponderantly the lumbar part and a lower half of the body (membrum inferius).

[0065] "Back \*\*\*\* course" It is the course which mainly massages back \*\*\*\* actuation to a subject, and a lower-half-of-the-body massage is also included.

[0066] "Acupressure course" It is the course which mainly massages acupressure actuation to a subject, and a lower half of the body is not contained.

[0067] It is to become the description in this massage machine which has two or more above-mentioned automatic massage courses to tame and perform a fade-in massage as a massage in advance of initiation of the massage by massage mode. In addition, in this example, it is made to perform a fade-out massage as a massage for cooling down

at the time of the massage termination by massage mode.

[0068] namely, -- if a favorite course is chosen from either of the automatic massage course carbon buttons S2-S6 in this example -- "taming -- fade-in massage" as a massage -- a massage is automatically performed in order of -> "bodily-shape detection" -> "two or more various massage modes" -> "a fade-out massage as a massage for cooling down."

[0069] In addition, acupressure of 30 seconds and a shoulder location is programmed where the time amount from which each massage mode, such as 30 etc. seconds, and it take \*\*\*\* of for example, a waist location to the above "two or more various massage modes" is put together suitably beforehand.

[0070] For example, if a "shoulder course" is chosen among automatic massage courses, a fade-in massage will be performed first.

[0071] That is, in case the massage unit 4 which was in the up stowed position of an initial state descends toward a waist location, after having got down even to the shoulder location at least, it is set to the "flush location" which massaging balls 5 and 6 mentioned above, a rolling massage which strokes the whole back is performed, and it stops in a waist location. This flush rolling massage tames and it becomes the fade-in massage which is a massage.

[0072] Subsequently, although bodily-shape detection explained in full detail behind is performed, as for the actuation so far, each step of operation is switched in the coordinate location of massaging balls 5 and 6.

[0073] if bodily-shape detection finishes -- as various massages -- a shoulder location \*\*\*\* massage, a shoulder location \*\*\*\* massage, and a shoulder location acupressure massage -- the massage by the mode beforehand programmed with .. is performed. In this case, although, as for each massage performed, spotting is made based on bodily-shape data standard before bodily-shape detection, the massaging ball location of each massage is controlled based on the detected bodily-shape data after bodily-shape detection. In this massage mode, the change of each step of operation is made by not a coordinate location but the time amount of massaging balls 5 and 6.

[0074] And although a fade-out massage is finally performed, at this time, updrift of the massage unit 4 is carried out towards the upper part from a waist location, it strokes like a fade-in massage, the massage by rolling is performed, and the massage unit 4 is contained by the up stowed position which is an initial valve position. In addition, each step of operation is switched by the coordinate location of massaging balls 5 and 6 in this fade-out massage.

[0075] Thus, all the "shoulder courses" that User M chose is completed.

[0076] In addition, by the above-mentioned fade-in massage and the above-mentioned fade-out massage, although the massage unit 4 was a one-way motion, it can set up suitably carrying out both-way actuation not only in this, or carrying out multiple-times round trip actuation etc. Moreover, as a gestalt of a fade-in fade-out massage, it may rub only not only in a rolling massage, for example, and a massage and an acupuncture massage may be combined.

[0077] By the way, the 1 user M is controlled more than continuation 30 minute on the whole to be unable to use it so that the massage machine 1 concerning this example cannot perform too much non-health massage.

[0078] When the automatic massage course containing the "shoulder course" which followed, for example, was described above has set up in 15 minutes, and other massage modes tend to be mixed several minutes and it is going to perform two sets or more of automatic massage courses, in order to exceed 30 minutes on the whole, the way things stand, there is a possibility of ending in the middle of a course.

[0079] Then, skip the mode in a course or shorten (curtailed service) and the massage time amount in each mode, respectively, or as the timing function was prepared and described above to the massage machine 1 in this example, (mode compaction) and each step of operation are compressed, and, in the case of combination which originally exceeds 30 minutes, operate, and even if it doubles two or more sets of automatic massage courses, it enables it to end a course massage without sense of incongruity within 30 minutes.

[0080] This is possible from having managed by time amount and having switched each step in the massage mode in each course, or independent massage mode of operation, as mentioned above.

[0081] Hereafter, the case where User M chooses an automatic massage course is explained more to a detail.

[0082] If a user sits down in the taking-a-seat section 14 and turns on the electric power switch S1 of remote control R (refer to drawing 14 ), the weight detection sensor 15 which served as the taking-a-seat detection means will detect taking a seat of User M, and, thereby, will perform initial setting of the massage unit 4. that is, the motor 23 for rise and fall drives, and the massage unit 4 is descended to the lowest end position which is User's M waist location -- making (f1) -- the motor 38 for an attitude drives and the massaging ball drive unit 9 is retreated in the method location of the last (f2) -- making -- further -- striking -- business -- a motor 57 -- rubbing -- business -- a motor 67 is driven and massaging balls 5 and 6 are moved to

a center valve position. At this time, each motors 38, 57, and 67 are controlled by the rotary encoder 92 as an amount detection means for an attitude of drives.

[0083] Next, a control unit 16 drives the motor 38 for an attitude, and it is made to move it in drawing 8 , while making the massaging ball drive unit 9 march out slightly (for example, about 10mm) so that it may be located on the line which the tip of massaging balls 5 and 6 shows with a sign L2, driving the motor 23 for rise and fall, and carrying out a rolling massage upwards.

[0084] As mentioned above, as the massage by software touch which strokes the back of a "flush location", a call, and User M for the advance location which the massaging ball drive unit 9 described above here can be performed, it tames in preparation for the formal massage started behind, and is considering as the fade-in massage as a massage.

[0085] In addition, although the whole body is stroked and rolling is made to perform by this fade-in massage, as mentioned above, it may rub and a massage and an acupressure massage may be combined.

[0086] moreover -- "a fade-out massage" -- a fade-in massage -- the same -- massaging balls 5 and 6 -- ed -- free medical treatment -- while the contact force with the section performs a massage in weakest "flush location", subsequently, it is the location where the contact force is strong, and is made to perform the massage of whenever [ weakness - middle ] from this "flush location."

[0087] After said fade-in massage finishes, a bodily-shape detection stroke is started next.

[0088] namely, the thing which detects the bodily shape of the users M, such as width of face, a configuration of the back (backbone), etc., the height, i.e., the shoulder location, of a shoulder of User M, -- it is -- as this bodily-shape detection stroke -- this example -- ed -- free medical treatment -- he is trying to include the actuation which gives a contact operation to the back used as the section

[0089] Furthermore, in this example, it is considering as the configuration equipped with a load current detection means to detect the load current under massage as a bodily-shape detection means, a coordinate detection means to detect the vertical position coordinate of a massaging ball, and a storage means to memorize the data from this coordinate detection means.

[0090] that is, as shown in drawing 11 , a control unit 16 drives the motor 23 for rise and fall, and descends the massage unit 4 to the lowest end position which is User's M waist location -- making (f1) -- the motor 38 for an attitude drives and the massaging ball drive unit 9 is retreated in the method location of the last (f2).

[0091] And drive the motor 38 for an attitude in the location, turn the massaging ball drive unit 9 ahead, and it moves gradually (—ed — free medical treatment — the back of the user who is the section — turning) (f3). If the above-mentioned load current detection means detects that the predetermined load (for example, load current) is impressed to the motor 38 for an attitude with the control unit 16 It memorizes with the storage means which suspended the motor 38 for an attitude and built the location in the control unit 16. (Coordinate conversion were carried out with the coordinate detection means through the control unit 16, and, specifically, the detection output of the rotary encoder 92 as an amount detection means for an attitude of drives is memorized with the storage means.) After that, the motor 38 for an attitude is driven, and the massaging ball drive unit 9 is back turned to the method location of the last, and it moves (f4). Let these (f3) actuation that reaches (f4) be the bodily-shape detection steps of one unit. In addition, in case storage of the location which the motor 38 for an attitude stopped moves the massaging ball drive unit 9 from the method location of the last to a halt location, you may make it memorize the time amount to which the motor 38 for an attitude operated as an amount of advance actuation of the massaging ball drive unit 9.

[0092] Subsequently, the motor 23 for rise and fall is driven, and based on detection of the rotary encoder 91 as an amount detection means for rise and fall of drives, the massage unit 4 is raised (f5), and like \*\*\*\*, only predetermined distance drives the motor 38 for an attitude in the location, turns the massaging ball drive unit 9 ahead, and moves gradually (f6). In addition, the control system which was made to carry out the predetermined time (for example, for 1 second) drive of the motor 23 for rise and fall may be used for control of rise-and-fall migration length.

[0093] What these actuation is repeated to a user's shoulder location, and is performed for (f7) detects the bodily shape of users, such as the height and width of face of User's M shoulder, and a configuration of the back. In addition, the massage unit 4 returns to an initial state (f2 location in drawing 11 R> 1) after detection termination.

[0094] And after bodily-shape detection stroke termination shifts promptly according to the selected contents of an automatic massage course, the following steps, i.e., programmed various massage modes. In this case, although, as for each massage performed, spotting is made based on bodily-shape data standard before bodily-shape detection, the massaging ball location of each massage is controlled based on the detected bodily-shape data after bodily-shape detection.

[0095] Above-mentioned bodily-shape detection uses as a bodily-shape detection

step actuation to which the massaging ball drive unit 9 (massaging balls 5 and 6) is made to advance to User M side in this way as described above. This step is repeatedly performed for every rise actuation which consists of predetermined unit movement magnitude, and the location where massaging balls 5 and 6 contacted User's M back is coordinate-ized, and he traces this coordinate, and is trying to detect bodily-shape Rhine in the operation means built in the control unit 16 (refer to drawing 14 ).

[0096] And in this example, while amending and recognizing detected bodily-shape Rhine, an indication is given possible.

[0097] Namely, massaging balls 5 and 6 are made to march out by the predetermined force by rotation of the motor 38 for an attitude, User's M back is pressed, and massaging balls 5 and 6 are in the condition of having been pushed into the body despite some, in the location where massaging balls 5 and 6 contacted the back.

[0098] That is, in case actual bodily-shape Rhine detects more exact bodily-shape Rhine by being outside detected Rhine and amending only that part and performs the massage according to this detection result, he is trying not to serve as a too strong massage.

[0099] He is trying to amend the amendment approach in this example according to whenever [ weight / of User M / , or reclining-angle / at the time of bodily-shape detection ].

[0100] that is , since an error arise for detection precision with the dependence to which the approach of bodily shape detection hang down and pass also through the size and the back of weight on the relation using the load current at the time of contact , it presume whether the body be however force on the massage unit 4 side , and presumed width of face D apply outside a sensing line , and amend by the increment degree of a weight value or the above-mentioned load current which detected by the weight detection sensor 15 which mentioned above ( refer to drawing 14 ) . Especially, in this example, since it has the detection sensor 18 whenever [ reclining-angle ], the load which User's M back also hangs down and joins 3 by both the sensors 15 and 18 is computable, and since the calculation result can determine correction value, exact bodily-shape Rhine can be obtained.

[0101] Moreover, if it is made to monitor the include angle of a reclining continuously when it puts down and massages with a favorite posture even if the load to massaging balls 5 and 6 changes at the time of a reclining, it is also possible to amend the proper amount of advances corresponding to change of the load at any time.

[0102] In addition, the simple target of applying the deflection (presumed width of face

D) of the specified quantity to bodily-shape Rhine detected for example, by the bodily-shape detection step as other amendment approaches can also be amended. That is, the standard deflection obtained experimentally is applied.

[0103] Thus, before massaging, it becomes possible to realize various massages in the optimal reinforcement for User M, and a location by obtaining User's M bodily-shape Rhine.

[0104] In addition, as detected bodily-shape Rhine is memorized within a control unit 16, when the same user uses the massage machine 1 continuously, it is desirable to enable it to choose whether bodily-shape detection is performed for time amount compaction. This selection actuation indicates whether choose it as remote control R, and should just be made to perform it by switch actuation.

[0105] Moreover, he is trying to display detection processing of bodily-shape Rhine mentioned above in this example in the display A prepared in remote control R.

[0106] That is, remote control R is shown in drawing 12 , and while forming the display A which is from a liquid crystal screen on an upper part side as a display means, the control unit S is formed in the lower part part.

[0107] The fundamental map for displaying detection actuation of bodily-shape Rhine is shown to Display A by the power up of the massage machine 1 so that it may illustrate. Bodily-shape Rhine displayed by the thick wire during the body display whose B expresses User M, and L are the rectangle lamps which were made to indicate by lighting corresponding to the pattern showing the location of massaging balls 5 and 6.

[0108] If detection processing of bodily-shape Rhine starts, as shown in drawing 13 , the status display of bodily-shape Rhine detection processing will be performed.

[0109] That is, in drawing 13 (a), the detection start was shown and the lowermost rectangle lamp L is on. And as shown in drawing 13 (b), the rectangle lamp L in which the location of massaging balls 5 and 6 is shown carries out sequential lighting with the rise of massaging balls 5 and 6.

[0110] And termination of detection displays bodily-shape Rhine B, as shown in drawing 13 (c). Moreover, he is trying to display the outline of the automatic massage course which will start from now on etc. on coincidence in the margin part of Display A. In addition, a thick dashed line shows the display of bodily-shape Rhine B in this way, and also it may indicate the vertebra by deformation. Or the body can also be displayed in three dimensions. in this case, the detectable means (this example -- rubbing -- business -- what is necessary is to change the width of face of a massaging ball and just to carry out attitude migration, since the location of the cross



direction of a massaging ball is detectable from a rotation shaft rotation location detection means) is established also about the cross direction as a bodily-shape detection means, and the data the cross direction and from the upper and lower sides perform a three dimensions body display. In addition, it is good also as a display by the wire frame as shown in drawing 16 as a three-dimensional display.

[0111] In addition, if the detection result of bodily-shape Rhine B is unusual, he is trying to demand displaying a certain abnormality message and performing detection processing for the second time from User M in this example, as shown in drawing 13 (d).

[0112] In addition, although bodily-shape Rhine B shown by drawing 13 (c) is the case of bodily-shape Rhine standard in comparison, a short person, a bodily shape in the case of a child, the deflection of the waist, etc. are large, or even if it is the bodily shape of a remarkable stoop, as shown in drawing 13 (e) and drawing 13 (f), a detection result is displayed as bodily-shape Rhine B out of a fundamental map, for example.

[0113] In addition, S1 is the start switch which served as the electric power switch, and each automatic massage course carbon button of the above-mentioned [ S2-S6 ] among drawing 12 . Moreover, S7 is an easy carbon button, and by operating this carbon button S7, when it is performing the automatic massage, it can be rubbed, and it can weaken actuation partially. The function switch of others in which S8 contains a primary earth switch in, and S9-S12 contain the object for an air massage, the object for heater ability, etc., and S13 are the fine-tuning carbon buttons of the shoulder location mentioned later.

[0114] Since a user's bodily shape is detected and memorized, drive control of each motor is carried out according to the memorized bodily-shape data and it can massage, massaging when an automatic massage course is chosen as explained above, a massage part and massage reinforcement become an exact thing according to a user, and a comfortable massage can be performed.

[0115] And since a user's bodily shape is detected and memorized in a massage stroke, specially, the stroke for bodily-shape detection is unnecessary, and does not give a user a complicated feeling.

[0116] Moreover, there is not only no complicated feeling, but it sets to this massage machine 1 by performing bodily-shape detection in the time zone which avoided the time of massage initiation. While a user can massage comfortably in the condition of having relaxed from the beginning to the last, can recover fatigue and can refresh mind and body, without being conscious of its bodily shape being detected Since

bodily-shape detection will be performed after being in the condition that the posture in which a certain amount of massage was performed and a user's massage was received was stabilized, stably exact bodily-shape detection is attained.

[0117] Furthermore, since the bodily-shape detection actuation itself has a massage operation, while the massage effectiveness of the whole automatic massage course improves, the feeling of IRAIRA to the period which does not have a massage operation to a user is not given.

[0118] Moreover, he is trying for this massage machine 1 to distinguish User's M shoulder location at the time of this bodily-shape detection.

[0119] Namely, when as shown in drawing 11 and drawing 14, while the massage unit 4 (massaging ball drive unit 9 containing massaging balls 5 and 6) carries out updrift from the initial state in User's M waist location to the best location are made into a bodily-shape detection stroke, In each bodily-shape detection step in this bodily-shape detection stroke, the step from which the amount of advances of the massaging ball drive unit 9 serves as max is used as the shoulder location detection step St 1 (f7 in drawing 11). Before and behind this shoulder location detection step St 1 Make it go up and down the massage unit 4 in the amount of rise and fall smaller than unit movement magnitude (movement magnitude when carrying out the predetermined time drive of the motor 23 for rise and fall), and the new bodily-shape detection steps St2 and St3 are performed. The amount of advances of the massaging ball drive unit 9 detected by these steps St2 and St3, A control unit 16 compares the amount of advances of the massaging ball drive unit 9 in said shoulder location detection step St 1, and he is trying to judge the coordinate acquired by the step with the larger amount of advances to be User's M shoulder location.

[0120] In drawing 14, since the time of the bodily-shape detection step St 3 newer than the shoulder location detection step St 1 is [ the amount of advances of the massaging ball drive unit 9 ] size, the coordinate (height and advance location) of the massaging balls 5 and 6 in these new bodily-shape detection step St 3:00 will be judged to be a shoulder location. Here, about a shoulder location, it is possible to tune finely because User M operates remote control R as mentioned above.

[0121] Thus, termination of detection of bodily-shape Rhine and a shoulder location performs a massage based on the selected course.

[0122] In addition, an abbreviation straight-line target is made to move from an advance location to the rise location in a retreat location towards the slanting upper part, and you may make it make it move to serrate on the whole about retreat \*\*\*\*\* of massaging balls 5 and 6 and rise actuation in a bodily-shape detection step, as the

broken line G of drawing 14 shows. When it is made this appearance, it is effective in the ability to shorten the time amount of a bodily-shape detection step.

[0123] Moreover, it faces detecting a shoulder location and can also carry out as other examples in the stroke shown in drawing 15 .

[0124] Namely, as drawing 14 showed, the new bodily-shape detection steps St2 and St3 are not performed before and behind the shoulder location detection step St 1 here. As shown in drawing 15 , after ending last shoulder location detection step St1' in a bodily-shape detection stroke, with movement magnitude smaller than unit movement magnitude (movement magnitude when carrying out the predetermined time drive of the motor 23 for rise and fall) The massage unit 4 is dropped gradually the number of suitable times. New bodily-shape detection step St2' and the amount of advances of the massaging ball drive unit 9 which performed St3' and was detected by these new bodily-shape detection steps St2 and St3, A control unit 16 compares the amount of advances of the massaging ball drive unit 9 in said shoulder location detection step St 1, and the coordinate acquired by the step with the larger amount of advances is judged to be User's M shoulder location.

[0125] This method also enables it to distinguish User's M shoulder location with a sufficient precision.

[0126] Moreover, he is trying to display on the display A of said remote control R also about the condition at the time of a massage in this massage machine 1.

[0127] By for example, the thing for which the rectangle lamp L in which a massage part is shown is divided to plurality, and a flashing display is moved forward and backward for every partition as shown in drawing 16 when the acupressure massage is being performed The acupressure massage which massaging balls 5 and 6 move forward and backward is indicated by the image, or as shown in drawing 17 , signs that the pattern showing massaging balls 5 and 6 is moved forward and backward are indicated by animation, and the approach of expressing an acupressure massage is taken.

[0128] Or as shown in drawing 18 , a massage part and the class of massage can also be displayed in three dimensions in the pattern which carries out the three dimensional display of the massaging balls 5 and 6 to the wire frame W which shows the body.

[0129] Anyway, User M can recognize visually of what kind of condition the massage performed now is a thing by enabling an action display of a massage condition.

[0130] By the way, although this example explained as what formed Display A in remote control R, animation display can be seen, carrying out a seat calmly, without

forming the large-sized screen C1 in the front face of the inside of this hood type display C, and User M gaining remote control R, while the back also hangs down and attaching the hood type display C in the upper part of 3 free [ vertical closing motion ], as shown, for example in drawing 19 .

[0131] in this case, the dynamic image which it not only displays the animation of a massage condition or the bodily-shape detection processing state mentioned above, but can be relaxed [ situation / of Nature ] by changing a screen -- or TV tuner, video equipment, etc. are built in and it can make it possible to see a favorite animation Furthermore, Loudspeakers CL and CR are attached in the hood type display C, and it can also enable it to output music, an acoustic wave, etc. which can be relaxed mentally.

[0132] It can massage in the thing equipped with this hood type display C, then the condition of having relaxed more, and the massage effectiveness also increases. In addition, C2 is the pivotable support section among drawing.

[0133] Next, a variety of massage patterns which the massage machine 1 concerning this example has are explained in full detail.

[0134] the massage unit 4 which the massage machine 1 can go up and down -- the massaging ball drive unit 9 -- an attitude -- movable -- arranging -- \*\*\*\* -- a massage -- by carrying out attitude migration of the massaging ball drive unit 9 working, different massage actuation from the former can be made to be able to perform, the class of massage can be made to increase, and the massage effectiveness is raised.

[0135] Especially this massage machine 1 By driving each motors 23, 38, 57, and 67 as a mechanical component, while a control unit 16 detects the amount of drives of each shafts 28, 43, 60, and 72 (rotation include angle) with the rotary encoders 91, 92, 93, and 94 as an amount detection means of drives The location of massaging balls 5 and 6 can be controlled finely, and the shoulder of a user's body, the back, the waist, etc. can be massaged in the variegated mode by combining suitably the drive of each motors 23, 38, 57, and 67.

[0136] And by retreating the massaging ball drive unit 9 until massaging balls 5 and 6 are located more back than the front face of a body supporter (the back also hangs down and it is 3), the actuation in which massaging balls 5 and 6 do not contact a user's body can be included during massage actuation, MERIHARI can be attached to the strength of a massage, and the massage effectiveness can be raised also by this.

[0137] That is, massage actuation of only an one direction can be made to perform by the back also hanging down and advancing the massaging ball drive unit 9 at the

lowest edge of 3, raising the massaging ball drive unit 9 along with User's M bodily shape after that, retreating the massaging ball drive unit 9 in User's M shoulder location, and dropping the massaging ball drive unit 9 after that, as shown in drawing 20 .

[0138] When actuation of the massage machine 1 in this massage approach is explained concretely, a control unit 16 First, it is made to move to the lowest edge of a back board 3, where it drove the motor 23 for rise and fall, and the motor 38 for an attitude and the massaging ball drive unit 9 is retreated. Next, drive the motor 38 for an attitude and the massaging ball drive unit 9 is advanced. Then, the massaging ball drive unit 9 is raised to a shoulder location along with User's M bodily shape measured beforehand by driving the motor 23 for rise and fall, and the motor 38 for an attitude. Then, the motor 38 for an attitude is driven in User's M shoulder location, the massaging ball drive unit 9 is retreated to the backmost part, and the massaging ball drive unit 9 is further dropped to the lowest edge of a back board 3 by driving the motor 23 for rise and fall. Actuation of this massaging ball drive unit 9 is repeated, and it is made to perform it.

[0139] the time of raising the massaging ball drive unit 9 here -- a control unit 16 -- striking -- business -- a motor 57 -- rubbing -- business -- when not making a motor 67 drive, rolling actuation of only an one direction is made to perform -- \*\*\*\*\* -- moreover, the control unit 16 -- striking -- business -- a motor 57 -- rubbing -- business -- if a motor 67 is driven -- an one direction -- striking -- actuation -- it is made to operate by rubbing

[0140] In addition, although the massaging ball drive unit 9 is dropped in the example shown in drawing 20 where it raised the massaging ball drive unit 9 where the massaging ball drive unit 9 is advanced, and the massaging ball drive unit 9 is retreated after that On the contrary, where the massaging ball drive unit 9 is advanced, the massaging ball drive unit 9 may be dropped, and where the massaging ball drive unit 9 is retreated after that, the massaging ball drive unit 9 may be raised.

[0141] Thus, rolling of only an one direction (facing up or facing down) and massage actuation which it strikes and is called \*\*\*\*\* can be made to perform by moving the massaging ball drive unit 9 to hard flow, after it moves the massaging ball drive unit 9 to above or down, and the back also gave the massaging ball drive unit 9 and massaging balls 5 and 6 have retreated it to back rather than the front face of 3 after that in the condition of having made the massaging ball drive unit 9 marching out. Move the massaging ball drive unit 9 to above or down in the condition of having made the massaging ball drive unit 9 marching out, and after that the massaging ball drive

unit 9 in moreover, the condition that massaging balls 5 and 6 contact User's M back lightly and of having made it retreating to a location Strength can be attached to massage actuation for every travelling direction of the massaging ball drive unit 9, and the massage actuation which was rich in change can be made to perform by moving the massaging ball drive unit 9 to hard flow.

[0142] Thus, rolling of only an one direction (facing up or facing down) and massage actuation which it strikes and is called \*\*\*\*\* can be made to perform in the condition of having made the massaging ball drive unit 9 marching out, by moving the massaging ball drive unit 9 in the vertical direction, and moving the massaging ball drive unit 9 to hard flow in the condition of having made the massaging ball drive unit 9 leaving after that.

[0143] Moreover, as shown in drawing 21 – drawing 23 , the back also hangs down and the massaging ball drive unit 9 is advanced at the lowest edge of 3. Then, attitude migration of the massaging ball drive unit 9 is carried out in order, raising the massaging ball drive unit 9 along with User's M bodily shape. The massage actuation repeatedly performed towards an one direction can be made to perform by retreating the massaging ball drive unit 9 in User's M shoulder location, and dropping the massaging ball drive unit 9 after that.

[0144] When actuation of the massage machine 1 in this massage approach is explained concretely, a control unit 16 First, it is made to move to the lowest edge of a back board 3, where it drove the motor 23 for rise and fall, and the motor 38 for an attitude and the massaging ball drive unit 9 is retreated. Next, drive the motor 38 for an attitude and the massaging ball drive unit 9 is advanced. Then, the massaging ball drive unit 9 is raised to a shoulder location along with User's M bodily shape by driving the motor 23 for rise and fall, and the motor 38 for an attitude. After driving the motor 38 for an attitude and retreating the massaging ball drive unit 9 to back rather than User's M bodily shape in that case, again, to User's M bodily shape, repeat the actuation which advances the massaging ball drive unit 9, and it is performed. Then, the motor 38 for an attitude is driven in User's M shoulder location, the massaging ball drive unit 9 is retreated to the backmost part, and the massaging ball drive unit 9 is further dropped to the lowest edge of a back board 3 by driving the motor 23 for rise and fall. Actuation of this massaging ball drive unit 9 is repeated, and it is made to perform it.

[0145] In case the massaging ball drive unit 9 is raised, as shown in drawing 21 , here a control unit 16 -- striking -- business -- a motor 57 -- rubbing -- business, when it is made to descend after driving the motor 23 for rise and fall, without making a motor

67 drive and raising the massaging ball drive unit 9 the massage approach which uses acupressure repeatedly -- becoming -- a control unit 16 -- striking -- business -- a motor 57 -- rubbing -- business -- if a motor 67 is made to drive, it will become the massage approach with repeat strength of striking and performing \*\*\*\*\*.

[0146] moreover, it is shown in drawing 22 -- as -- a control unit 16 -- striking -- business -- a motor 57 -- rubbing -- business -- when driving the motor 23 for rise and fall, without making a motor 67 drive and continuing raising the massaging ball drive unit 9, it becomes the massage approach of performing wave rolling which rolls repeatedly.

[0147] moreover, it is shown in drawing 23 -- as -- a control unit 16 -- striking -- business -- a motor 57 -- rubbing -- business -- the massage approach of performing pressure-from-below acupressure when it is made moving forward, driving the motor 23 for rise and fall, and the motor 38 for an attitude, without making a motor 67 driving, and raising the massaging ball drive unit 9 -- becoming -- a control unit 16 -- striking -- business -- a motor 57 -- rubbing -- business -- if a motor 67 is made to drive, it will become with the massage approach of striking with pressure from below and performing \*\*\*\*\*.

[0148] In addition, although the massaging ball drive unit 9 is dropped where it raised the massaging ball drive unit 9 where the massaging ball drive unit 9 is advanced, and the massaging ball drive unit 9 is retreated after that On the contrary, where the massaging ball drive unit 9 is advanced, the massaging ball drive unit 9 may be dropped, and where the massaging ball drive unit 9 is retreated after that, the massaging ball drive unit 9 may be raised.

[0149] in order [ thus, ] to repeat the massaging ball drive unit 9 and to carry out attitude migration during rise and fall of the massaging ball drive unit 9 -- wave rolling and return acupressure -- it thrusts up, and it can rub and massage actuation of \*\*\*\*\* acupressure etc. can be made to perform

[0150] Moreover, the massage actuation which was rich in change of strength can be made to perform by striking to a massaging ball drive unit, and carrying out attitude migration of the massaging ball drive unit, making it operate, or rub and operate, as shown in drawing 24 and drawing 25 .

[0151] When actuation of the massage machine 1 in this massage approach is explained concretely, a control unit 16 While carrying out attitude / rise-and-fall migration of the massaging ball drive unit 9 so that the motor 23 for rise and fall and the motor 38 for an attitude may be driven and massaging balls 5 and 6 may contact the specific part of User's M back in the massaging ball drive unit 9 striking --

business -- a motor 57 -- or -- rubbing -- business -- a motor 67 -- driving -- the massaging ball drive unit 9 -- striking -- actuation -- or it is made to operate by rubbing Actuation of this massaging ball drive unit 9 is repeated, and it is made to perform it.

[0152] here, it is shown in drawing 24 -- as -- a control unit 16 -- massaging balls 5 and 6 -- the specific part of User's M back -- the abbreviation from back -- when the massaging ball drive unit 9 is moved so that it may contact horizontally, it becomes the massage approach struck or rubbed, repeating a specific part and attaching strength.

[0153] Moreover, when the massaging ball drive unit 9 is moved so that massaging balls 5 and 6 may thrust up from a lower part towards the upper part to the specific part of User's M back with a control unit 16 and it may contact as shown in drawing 25 , it becomes the massage approach struck or rubbed, repeating a specific part and thrusting up with strength.

[0154] Thus, the massage actuation with MERIHARI to which it struck and \*\*\*\*\* was changed sharply can be made to perform by striking to the massaging ball drive unit 9, and carrying out attitude migration of the massaging ball drive unit 9, making it operate, or rub and operate.

[0155] Moreover, the massage actuation accompanied by acupressure can be made to perform by striking to the massaging ball drive unit 9, and striking, and carrying out attitude migration of the massaging ball drive unit 9, actuation or where it rubbed and actuation is suspended after carrying out attitude migration of the massaging ball drive unit 9, making it operate, or rub and operate, as shown in drawing 26 .

[0156] When actuation of the massage machine 1 in this massage approach is explained concretely, a control unit 16 While carrying out attitude / rise-and-fall migration of the massaging ball drive unit 9 so that the motor 23 for rise and fall and the motor 38 for an attitude may be driven and massaging balls 5 and 6 may contact the specific part of User's M back in the massaging ball drive unit 9 striking -- business -- a motor 57 -- or -- rubbing -- business -- a motor 67 -- driving -- the massaging ball drive unit 9 -- striking -- actuation -- or it operates by rubbing -- making -- after that -- striking -- business -- a motor 57 -- rubbing -- business -- while stopping a motor 67, he drives the motor 38 for an attitude and is trying to advance the massaging ball drive unit 9 Actuation of this massaging ball drive unit 9 is repeated, and it is made to perform it.

[0157] Thus, since it strikes, and attitude migration of the massaging ball drive unit 9 is carried out actuation or where it rubbed and actuation is suspended after carrying



out attitude migration of the massaging ball drive unit 9, striking, operating or rubbing and operating the massaging ball drive unit 9, the massage actuation accompanied by acupressure which strikes and performs \*\*\*\*\* can be made to perform.

[0158] Moreover, massaging balls 5 and 6 are closed, the massaging ball drive unit 9 is retreated after that, and when it considers as the condition of having opened massaging balls 5 and 6 right and left again, massage actuation which presses out User's M back can be made to perform, after it advances the massaging ball drive unit 9 with the condition of having opened massaging balls 5 and 6 right and left and massaging balls 5 and 6 contact User's M back, as shown in drawing 27 .

[0159] When actuation of the massage machine 1 in this massage approach is explained concretely, a control unit 16 After driving the motor 23 for rise and fall, and the motor 38 for an attitude and moving the massaging ball drive unit 9 behind the specific part of User's M back, Drive a motor 67, open massaging balls 5 and 6 right and left, drive the motor 38 for an attitude in the condition as it is, advance the massaging ball drive unit 9, and massaging balls 5 and 6 are made to contact User's M back. rubbing -- business -- Drive a motor 67 and massaging balls 5 and 6 are closed by turning and moving massaging balls 5 and 6 to the method of the inside (center). then -- rubbing -- business -- after driving the motor 38 for an attitude again and retreating the massaging ball drive unit 9 -- rubbing -- business -- he drives a motor 67 and is trying to open massaging balls 5 and 6 right and left Actuation of this massaging ball drive unit 9 is repeated, and it is made to perform it.

[0160] Thus, since the massaging ball drive unit 9 is operated in the condition of having made the massaging ball drive unit 9 marching out, by rubbing towards the direction which narrows spacing of the massaging balls 5 and 6 on either side, the massage actuation which performs extraction can be made to perform.

[0161] Moreover, massaging balls 5 and 6 are opened right and left, the massaging ball drive unit 9 is retreated after that, and when it considers as the condition of having closed massaging balls 5 and 6 again, massage actuation which extends User's M back can be made to perform, after it advances the massaging ball drive unit 9 with the condition of having closed massaging balls 5 and 6 and massaging balls 5 and 6 contact User's M back, as shown in drawing 28 .

[0162] When actuation of the massage machine 1 in this massage approach is explained concretely, a control unit 16 After driving the motor 23 for rise and fall, and the motor 38 for an attitude and moving the massaging ball drive unit 9 behind the specific part of User's M back, Drive a motor 67 and massaging balls 5 and 6 are closed by turning and moving massaging balls 5 and 6 to the method of the inside

(center). rubbing -- business -- Drive the motor 38 for an attitude in the condition as it is, advance the massaging ball drive unit 9, and massaging balls 5 and 6 are made to contact User's M back. then -- rubbing -- business -- after having driven the motor 67, having opened massaging balls 5 and 6 by turning and moving massaging balls 5 and 6 to right and left, driving the motor 38 for an attitude again and retreating the massaging ball drive unit 9 -- rubbing -- business -- he drives a motor 67 and is trying to close massaging balls 5 and 6 Actuation of this massaging ball drive unit 9 is repeated, and it is made to perform it.

[0163] Thus, since the massaging ball drive unit 9 is operated in the condition of having made the massaging ball drive unit 9 marching out, by rubbing towards the direction which spreads spacing of the massaging balls 5 and 6 on either side, the massage actuation which performs enlargement can be made to perform.

[0164] Moreover, as shown in drawing 28 , where only one massaging ball 5 is advanced, advance the massaging ball drive unit 9, and only one side (left-hand side) of User's M back is used acupressure. Then, by advancing the massaging ball 6 of another side, while retreating one massaging ball 5, advancing the massaging ball drive unit 9 again in the condition, and using acupressure only one side (right-hand side) of User's M back The massage actuation which uses acupressure User's M back by turns can be made to perform.

[0165] When actuation of the massage machine 1 in this massage approach is explained concretely, a control unit 16 after driving the motor 23 for rise and fall, and the motor 38 for an attitude and moving the massaging ball drive unit 9 behind the specific part of User's M back -- striking -- business -- a motor 57 is driven and the left-hand side massaging ball 5 is moved forward -- making (the right-hand side massaging ball 6 retreating in connection with this.) Drive the motor 38 for an attitude in the condition as it is, advance the massaging ball drive unit 9, and a massaging ball 5 is pushed against User's M back. then -- while driving the motor 38 for an attitude and retreating the massaging ball drive unit 9 -- striking -- business -- a motor 57 is driven and the right-hand side massaging ball 6 is moved forward -- making (the left-hand side massaging ball 5 retreating in connection with this.) The motor 38 for an attitude is driven in the condition as it is, and he advances the massaging ball drive unit 9, and is trying to push a massaging ball 6 against User's M back. It is made to perform actuation of this massaging ball drive unit 9 repeatedly, raising the massaging ball drive unit 9 along with User's M bodily shape, as shown in drawing 29 .

[0166] Thus, massage actuation which uses acupressure User's M back alternately with right and left can be performed by carrying out attitude migration of the

massaging ball drive unit 9, where only the massaging balls 5 and 6 of one of right and left are made to project.

[0167] Without the users M including each above-mentioned message pattern choosing an automatic course, various kinds of message patterns can be chosen according to an individual by actuation of remote control R, and it can be made to operate.

[0168] this time -- massaging balls 5 and 6 -- -ed -- free medical treatment -- bodily-shape detection performed through the automatic message course in which the contact force with the section was mentioned above since the current load determined the location of massaging balls 5 and 6, i.e., a coordinate, can also be performed in parallel with the midst which is performing various massages.

[0169] Therefore, when the automatic message course is not chosen, bodily-shape detection is performed in parallel with various massages, and the optimal message doubled with the subsequent user M is attained.

[0170] On the other hand, also after taming and performing bodily-shape detection after a massage by the case where an automatic message course is chosen, it becomes possible by carrying out bodily-shape detection, whenever various massages are made to update bodily-shape Rhine obtained previously.

[0171] Especially, since actuation of massaging balls 5 and 6 is a bodily-shape detection stroke and abbreviation identitas in an acupressure massage, there is a merit which is easy to obtain the data of a bodily shape.

[0172] while choosing a neck, a shoulder, the back, the waist, or the whole as for example, a massage part -- striking -- rubbing -- etc. -- it is chosen as arbitration from various message patterns, and width of face etc. is further chosen in the degree of a massage, for example, speed, and strength.

[0173] although it will massage based on the contents which User M chose, the massage machine 1 was mentioned above also here, before starting this massage -- taming -- a massage -- carrying out -- making -- moreover -- this -- it can tame and detection of bodily-shape Rhine and a shoulder location can be performed between massages.

[0174] For example, in [ in a shoulder location ] massaging by striking, as mentioned above (refer to drawing 11 and drawing 14 ), the command from a control unit 16 performs first detection of bodily-shape Rhine and a shoulder location.

[0175] and it goes up and down to the shoulder location of the user M who drove the motor 23 for rise and fall, and the motor 38 for an attitude, and detected the massage unit 4 and the massaging ball drive unit 9 with the control unit 16 after that at the time

of bodily-shape Rhine detection of User M -- making -- after that -- striking -- business -- a motor 57 is driven, massaging balls 5 and 6 are boiled by turns, and a cross direction is made to rock

[0176] If the motor 38 for an attitude is driven, the massaging ball drive unit 9 is moved more back than User's M shoulder location in that case and massaging balls 5 and 6 are located at it more back than User's M shoulder location User M will be weakly patted on a shoulder, and when the motor 38 for an attitude is driven, the massaging ball drive unit 9 is ahead moved rather than User's M shoulder location conversely and massaging balls 5 and 6 are ahead located rather than User's M shoulder location, User M will be strongly patted on a shoulder.

[0177] therefore, be alike motor 38 for an attitude -- since the suitable massage according to the condition of the part which massages can be performed while being able to attach strength to massage actuation and engaging MERIHARI in a massage by this by making a cross direction carry out attitude migration of the Li massaging ball drive unit 9, the massage effectiveness can be raised remarkably.

[0178] And since the shoulder location is detected correctly beforehand, it can massage effectively by the shoulder for which User M asks striking.

[0179] Moreover, in performing the acupressure massage of the whole back, for example, it performs detection of a shoulder location and bodily-shape Rhine first similarly at this time. In addition, when carrying out continuously with a previous massage, it is good also at this time to enable it to choose User M for whether detection of a shoulder location and bodily-shape Rhine is performed.

[0180] If it shifts to an acupressure massage, while driving the motor 23 for rise and fall, and the motor 38 for an attitude with a control unit 16 It is made to move to the waist location of the user M who detected the massage unit 4 and the massaging ball drive unit 9 by bodily-shape Rhine detection. Then, after driving only the motor 38 for an attitude in the location, advancing the massaging ball drive unit 9 and pushing massaging balls 5 and 6 against User's M back, while retreating the massaging ball drive unit 9 The motor 23 for rise and fall and the motor 38 for an attitude are driven, and actuation of raising slightly the massage unit 4 and the massaging ball drive unit 9 is repeated to User's M shoulder location, and is performed.

[0181] Thus, User's M back can be used acupressure by driving the motor 38 for an attitude in the halt location of the massage unit 4, and advancing only the massaging ball drive unit 9.

[0182] Moreover, since bodily-shape Rhine detection can be effectively performed to coincidence as mentioned above when performing this acupressure massage, renewal

of automatic of bodily-shape Rhine and the shoulder location can always be carried out.

[0183] As explained above, since the class of massage can be made to be able to increase, a variegated massage can be performed and the suitable massage doubled with User's M bodily shape can moreover be performed, in the massage machine 1 concerning this example, the massage effectiveness can be raised greatly.

[0184] By the way, when a control unit 16 detects the time amount to which User M has sat down continuously by the weight detection sensor 15 which served as the taking-a-seat sensor and the massage is performed continuously beyond predetermined time (for example, 7 minutes), he is trying to emit warning to User M in this example, when massaging, as mentioned above. As a means to report warning, while displaying on the display A of remote control R, an alarm, voice, etc. are uttered.

[0185] Thereby, generating of the poor health of a massage depended for carrying out too much can be prevented beforehand.

[0186] By the way, various kinds of massages which can be performed with the massage machine 1 concerning this example mentioned above can raise the massage effectiveness further by changing strength, a count, time amount, etc. according to the stiffness condition of User's M body.

[0187] Therefore, he arranges a touch sensor 101 in the massaging ball drive unit 9 free [ an attitude ], and is trying to detect the stiffness condition of User's M body using this touch sensor 101 in the massage machine 100 shown in drawing 30 and drawing 31 .

[0188] While a touch sensor 101 attaches the upper limit of a bracket 102 in the inside upper part of the massage unit casing 22 and attaches the motor 103 for migration in the lower part of this bracket 102 While attaching the drive gear 105 in the driving shaft 104 of the motor 103 for the said migration, making the upper part of a bracket 102 carry out the distraction to a cross direction and attaching a rod 106 in it free [ an attitude ] on the other hand Engrave a male screw 107 on the posterior part of this rod 106, and the follower gear 108 is screwed on this male screw 107. Interlocking connection of these drive gear 105 and the follower gear 108 is carried out by the transmission belt 109. Further The body 110 of a sensor which consists of an oscillating component which used the piezo-electric ceramic component for the point of a rod 106, and a sensing element was attached, and the hard nylon ball as contact 111 is attached in the point of this body 110 of a sensor. 112 are a cable to which a key seat and 113 connect a surroundings stop to, and 114 connects the body 110 of a sensor, and a control unit 16 among drawing.

[0189] And he is trying for a touch sensor 101 to detect the stiffness condition of User's M body by driving the motor 103 for migration by making a rod 106 march out, contacting contact 111 in User's M body, where the body 110 of a sensor is vibrated with a fixed frequency and the fixed amplitude, and measuring resonance frequency and the amplitude at the time of resonance by the body 110 of a sensor.

[0190] in addition, as the technique of measuring the stiffness condition of the body using a touch sensor 101 An elaborate part (a sign 115 shows among drawing 31 .) The part which is not elaborate (a sign 116 shows among drawing 31 .) Since resonance frequency differs from the amplitude at the time of resonance and this change corresponds with the amount of lactic acids in blood, at (1997 year medicine-for-physical-fitness meeting Official announcement), It turns out that the stiffness condition of the body can be measured by measuring resonance frequency and the amplitude at the time of resonance where a touch sensor 101 is contacted in the body.

[0191] Moreover, if various kinds of massages mentioned above measure User's M bodily shape in three dimension and move massaging balls 5 and 6 based on this three-dimension-bodily shape, they can raise the massage effectiveness further.

[0192] Therefore, in the massage machine 117 shown in drawing 32 , a bodily-shape detection means 118 to measure User's M bodily shape in three dimension is established.

[0193] Up and down, spacing was opened in the interior of a back board 3, and, as for this bodily-shape detection means 118, two or more optical fibers 119 which carried out the distraction towards the right-and-left cross direction are attached in it. Each optical fiber 119 While opening spacing crosswise [ right-and-left ], forming two or more openings 120 (crack) in it at the backside [ the halfway section ] and connecting LED as a light emitting device 121 to a left-hand side edge Connect the photo transistor as a photo detector 122 to a right-hand side edge, and these light emitting devices 121 and a photo detector 122 are connected to a control unit 16. While making the light emitting device 121 of each optical fiber 119 emit light with a control unit 16 He asks for the curvature in each height of User's M body, and is trying to measure the bodily shape of User's M body in three dimension from the curvature by trying to detect light income by the photo detector 122, and computing the curvature of each optical fiber 119 from this light income.

[0194] As typically shown in drawing 33 and drawing 34 , namely, when User's M body is comparatively even the curvature of an optical fiber 119 greatly (condition of \*\* in drawing 33 ) therefore A photo detector 122 is reached without the light which the

light emitting device 121 emitted almost leaking from opening 120. The light income in a photo detector 122 is large, and on the other hand, the curvature of an optical fiber 119 becomes small as User's M body is roundish (condition of \*\* in drawing 33 , or \*\*). The light which the light emitting device 121 emitted in connection with it begins to leak from opening 120, and the light income in a photo detector 122 becomes small.

[0195] As a means to measure User's M bodily shape in three dimension, what the back also hung down and formed the pressure sensor of the shape of a sheet as a bodily-shape detection means 124 in 3 like the massage machine 123 shown in drawing 35 may be used.

[0196] Thus, when User's M bodily shape is measured in three dimension, the massage actuation by three dimension meandering rolling in alignment with User's M bodily shape can be made to perform because you make it go up and down massaging balls 5 and 6 all around based on User's M three-dimension-bodily shape as shown in drawing 36 .

[0197] moreover -- the case where a sheet-like pressure sensor is used as a bodily-shape detection means 124 -- the location of the pressure value in each detection area of a pressure sensor to the massaging balls 5 and 6, i.e., free medical treatment, -- a location is also detectable.

[0198]

[Effect of the Invention] This invention is carried out with a gestalt which was explained above, and does so effectiveness which is indicated below.

[0199] (1) In the massage machine whose massage possessed the massage unit which formed the massaging ball in this invention according to claim 1, combined alternatively or suitably out of two or more massage modes, and was enabled Since it tames and a fade-in massage is performed as a massage in advance of initiation of the massage by massage mode Since the body has adapted itself even if the full-scale massage by the massaging ball is started, a massage can be received smoothly, without becoming it tense, and the effectiveness of a massage can fully be acquired.

[0200] (2) In the massage machine whose massage possessed the massage unit which formed the massaging ball in this invention according to claim 2, combined alternatively or suitably out of two or more massage modes, and was enabled Since a fade-out massage is performed as a massage for cooling down at the time of the massage termination by massage mode While being able to prevent a massage being completed suddenly and bringing a user displeasure, the arrangement movement-time amount which returns the condition of the muscles (body) massaged and understood by the massage to a normal state will be set up, and it can move to the usual life

actuation smoothly after message termination.

[0201] (3) In the massage machine whose massage possessed the massage unit which formed the massaging ball in this invention according to claim 3, combined alternatively or suitably out of two or more massage modes, and was enabled While taming and performing a fade-in massage as a massage in advance of initiation of the massage by massage mode, at the time of the massage termination by massage mode Since a fade-out massage is performed as a massage for cooling down, the effectiveness of the above (1) and (2) can be acquired.

[0202] (4) the massage performed before and after the massage by the above-mentioned massage mode in this invention according to claim 4 -- a massaging ball -- -ed -- free medical treatment -- since it was made to be carried out in the location which advanced the massaging ball drive unit to extent which contacts the section lightly -- -ed -- free medical treatment -- the load to the body which is the section becomes the optimal at the time of installation of a formal massage, or termination by comfortable massage greatly.

[0203] (5) While constituting from this invention according to claim 5 at a chair ceremony equipped with a seat body and a back board The elevator style which makes it go up and down a massage unit along with a back board is prepared. furthermore, this massage unit is made to rock a massaging ball to a cross direction -- striking -- business -- a motor -- The massaging ball drive unit possessing a motor is arranged. eccentric rotation of the massaging ball is carried out -- rubbing -- business -- And the massage which carries out before and after a massage the motor for an attitude constitutes this massaging ball drive unit possible [ an attitude ] to a cross direction the whole massaging ball, and moreover according to massage mode the massaging ball among the range of said massaging ball drive unit which can be moved -- -ed -- free medical treatment -- by having been made to carry out in the condition of having moved to the backmost part location which can be massaged in contact with the section While a user can receive a massage in the condition of having relaxed with the easy posture Since change of the contact depth to the body of a massaging ball can be enlarged by enabling the attitude of a massaging ball drive unit By attaining a variegated massage by class doubling with rocking of a massaging ball, eccentric rotation, and an order attitude, taming, before receiving the starting variegated massage moreover, and performing the fade-in massage as a massage Since the body can be accommodated to a massaging ball, the massage effectiveness can be heightened more, and after [ still more nearly full-scale ] winning popularity, it can move to the usual life actuation smoothly after message termination by receiving the



fade-out massage used as cooling down.

[0204] (6) Since it carried out that it is the rolling massage performed by the massage performed before and after the massage by the above-mentioned massage mode in this invention according to claim 6 meeting that the back also hangs down a massaging ball, and making it go up and down it through an elevator style, it is only the actuation which makes it go up and down a massage unit, and a comfortable flush rolling massage can carry out, a user is led to a formal massage by very comfortable massage, and termination of a formal massage can accept with a sufficient feeling further.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the side elevation of the massage machine concerning this invention.

[Drawing 2] It is the whole massage unit explanatory view.

[Drawing 3] It is an explanatory view by this front view.

[Drawing 4] It is an explanatory view by this plane view.

[Drawing 5] It is an explanatory view by the side view which strikes and shows a device.

[Drawing 6] It is an explanatory view by the side view which rubs and shows a device.

[Drawing 7] It is the explanatory view showing attitude migration of a massaging ball drive unit.

[Drawing 8] It is the explanatory view showing the attitude location of a massaging ball.

[Drawing 9] It is the block diagram showing a control unit.

[Drawing 10] It tames and is the explanatory view of a massage.

[Drawing 11] It is the explanatory view of bodily-shape Rhine detection processing.

[Drawing 12] It is the front view of remote control.

[Drawing 13] It is the explanatory view showing the display gestalt in the display of remote control.

[Drawing 14] It is the explanatory view showing the display gestalt of shoulder location detection processing.

[Drawing 15] It is the explanatory view showing the example of a change of the display gestalt of shoulder location detection processing.

[Drawing 16] It is the explanatory view showing the display gestalt of a massage condition.

[Drawing 17] It is the explanatory view showing the display gestalt of a massage condition.

[Drawing 18] It is the explanatory view showing the display gestalt of a massage condition.

[Drawing 19] It is the explanatory view showing other examples of a display.

[Drawing 20] It is the mimetic diagram showing the massage approach (massage of only an one direction).

[Drawing 21] It is the mimetic diagram showing the massage approach (massage accompanied by [ change and ] \*\*).

[Drawing 22] It is the mimetic diagram showing the massage approach (massage by wave rolling).

[Drawing 23] It is the mimetic diagram showing the massage approach (massage accompanied by pressure from below).

[Drawing 24] It is the mimetic diagram showing the massage approach (massage which attached strength).

[Drawing 25] It is the mimetic diagram showing the massage approach (massage accompanied by pressure from below).

[Drawing 26] It is the mimetic diagram showing the massage approach (massage accompanied by acupressure).

[Drawing 27] It is the mimetic diagram showing the massage approach (massage by extraction).

[Drawing 28] It is the mimetic diagram showing the massage approach (massage by enlargement).

[Drawing 29] It is the mimetic diagram showing the massage approach (acupressure performed by turns).

[Drawing 30] It is the side-face explanatory view showing the massage machine possessing a touch sensor.

[Drawing 31] It is the side-face explanatory view showing a touch sensor.

[Drawing 32] It is the strabism explanatory view showing the massage machine possessing a bodily-shape detection means to detect a bodily shape in three dimension.

[Drawing 33] It is the explanatory view having shown typically how to detect a bodily shape in three dimension.

[Drawing 34] It is the explanatory view showing the relation between curvature and light income.

[Drawing 35] It is the strabism explanatory view showing the massage machine

possessing a bodily-shape detection means to detect a bodily shape in three dimension.

[Drawing 36] It is the explanatory view showing the motion of a massaging ball based on the bodily shape detected in three dimension.

[Description of Notations]

- 1 Massage Machine
- 2 Seat Body
- 3 Back Board
- 4 Massage Unit
- 5 Six Massaging ball
- 9 Massaging Ball Drive Unit

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